

Appendix C

Material Safety Data Sheet (MSDS):

Thimerosal [54-64-8]

MSDSs From:

1. Eli Lilly and Company, 1999 and
2. Sigma Chemical Company, 2002

1. Eli Lilly and Company's MSDS

Thimerosal



Thimerosal

Effective Date: 22-Dec-1999

Eli Lilly and Company
Material Safety Data Sheet

Section 1 - Chemical Product and Company

Manufacturer:
Eli Lilly and Company
Lilly Corporate Center
Indianapolis, IN 46285

Manufacturer's Emergency Phone:

1-317-276-2000

CHEMTREC:

1-800-424-9300 (North America)

1-703-527-3887 (International)

Common Name: Thimerosal

[Section 2 is omitted.]

Section 3 - Hazards Identification

Appearance: Light cream-colored crystalline powder

Physical State: Solid

Odor: Faint metallic odor/taste

Emergency Overview



Special
R = Reproductive
A = Allergen

Emergency Overview Effective Date: 08-Dec-1999

Lilly Laboratory Labeling Codes:

Health 2

Fire 1

Reactivity 0

Special R, A

Primary Physical and Health Hazards: Skin Permeable. Toxic. Mutagen. Irritant (eyes). Allergen. Nervous System and Reproductive Effects.

Caution Statement: Thimerosal may enter the body through the skin, is toxic, alters genetic material, may be irritating to the eyes, and causes allergic reactions. Effects of exposure may include numbness of extremities, fetal changes, decreased offspring survival, and lung tissue changes.

Routes of Entry: Inhalation and skin absorption.

Effects of Overexposure: Topical allergic dermatitis has been reported. Thimerosal contains mercury. Mercury poisoning may occur and topical hypersensitivity reactions may be seen. Early signs of mercury poisoning in adults are nervous system effects, including narrowing of the visual field and numbness in the extremities. Exposure to mercury in utero and in children may cause mild to severe mental retardation and mild to severe motor coordination impairment. Based on animal data, may be irritating to the eyes.

Medical Conditions Aggravated by Exposure: Hypersensitivity to mercury.

Chronic Exposure

Thimerosal is a mercuric compound. Toxicity data for thimerosal and mercury are presented.

Target Organ Effects: Thimerosal - Kidney effects (tubule necrosis), lung effects (tissue changes). Mercury - Nervous system effects (insomnia, tremor, anorexia, weakness, headache), liver effects (jaundice, digestive effects (hypermotility, diarrhea)).

Other Effects: Thimerosal - Decreased weight gain.

Reproduction: Thimerosal - Decreased offspring survival.

Mercury - Changes in sperm production, decreased offspring survival, and offspring nervous system effects including mild to severe mental retardation and motor coordination impairment.

Sensitization: No applicable information found.

Mutagenicity: Thimerosal - Mutagenic in mammalian cells. Not mutagenic in bacterial cells.

2. Sigma Chemical Co's MSDS Sheet

Valid 11/2002 - 01/2003

Sigma Chemical Co.
P.O. Box 14508
St. Louis, MO 63178 USA
Phone: 314-771-5765

M A T E R I A L S A F E T Y D A T A S H E E T

SECTION 1. - - - - - CHEMICAL IDENTIFICATION- - - - -

CATALOG #: T5125
NAME: THIMEROSAL

SECTION 2. - - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - -

CAS #: 54-64-8
MF: C9H9HGNAO2S
EC NO: 200-210-4

SYNONYMS

((O-CARBOXYPHENYL)THIO)ETHYLMERCURY SODIUM SALT * ELICIDE * ETHYL(2-) Tj0ET0BT0

ACID SODIUM SALT * ETHYLMERCURITHIOSALICYLIC ACID SODIUM SALT *
ETHYLMERKURITHIOSALICILAN SODNY (CZECH) * ETHYL (SODIUM O-) Tj0ET0BT0/PjCourie

MERTHIOLATE SODIUM * MERTORGAN * MERZONIN * MERZONIN SODIUM * SET *
SODIUM ETHYLMERCURIC THIOSALICYLATE * SODIUM O-(ETHYLMERCURITHIO)
BENZOATE * SODIUM ETHYLMERCURITHIOSALICYLATE * SODIUM MERTHIOLATE *
THIMEROSAL * THIMEROSALATE * THIOMERSAL * THIOMERSALATE *

SECTION 3. - - - - - HAZARDS IDENTIFICATION - - - - -

LABEL PRECAUTIONARY STATEMENTS

HIGHLY TOXIC (USA)
VERY TOXIC (EU)
VERY TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
DANGER OF CUMULATIVE EFFECTS.
MAY CAUSE SENSITIZATION BY INHALATION AND SKIN CONTACT.
IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN.
CALIF. PROP. 65 REPRODUCTIVE HAZARD.
TARGET ORGAN(S):
NERVES
KIDNEYS
SENSITIZER.
CAUSES IRRITATION.
KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDINGSTUFFS.
AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF WATER.
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF
WATER AND SEEK MEDICAL ADVICE.
WEAR SUITABLE PROTECTIVE CLOTHING.
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE
IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).

SECTION 4. - - - - - FIRST-AID MEASURES- - - - -

IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.
CALL A PHYSICIAN IMMEDIATELY.
IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING GIVE ARTIFICIAL
RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.
IN CASE OF SKIN CONTACT, FLUSH WITH COPIOUS AMOUNTS OF WATER
FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND
SHOES. CALL A PHYSICIAN.
IN CASE OF CONTACT WITH EYES, FLUSH WITH COPIOUS AMOUNTS OF WATER
FOR AT LEAST 15 MINUTES. ASSURE ADEQUATE FLUSHING BY SEPARATING
THE EYELIDS WITH FINGERS. CALL A PHYSICIAN.

Appendix 'C' – MSDS Documents

SECTION 11. - - - - - TOXICOLOGICAL INFORMATION - - - - -
ACUTE EFFECTS
CAUSES SKIN IRRITATION.
MAY BE FATAL IF ABSORBED THROUGH SKIN.
CAUSES EYE IRRITATION.
MAY BE FATAL IF INHALED.
MATERIAL IS IRRITATING TO MUCOUS MEMBRANES AND UPPER
RESPIRATORY TRACT.

Appendix 'C' – MSDS Documents

MAY BE FATAL IF SWALLOWED.
 POSSIBLE ALLERGIC REACTION TO DUST IF INHALED, INGESTED OR IN CONTACT
 WITH THE SKIN. HYPERSENSITIVITY REACTIONS MANIFESTED BY ERYTHEMA,
 PAPULAR OR VESICULAR ERUPTIONS OCCUR OCCASIONALLY. ALLERGIC
 CONJUNCTIVITIS HAS BEEN REPORTED.
 TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND
 TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

CHRONIC EFFECTS
 TARGET ORGAN(S) :
 NERVES
 KIDNEYS

RTECS #: OV8400000
 MERCURY, ((O-CARBOXYPHENYL)THIO)ETHYL-, SODIUM SALT

IRRITATION DATA
 EYE-RBT 8 UG MLD AJOPAA 78,98,1974

TOXICITY DATA

IAL-CHD LDLO:60 MG/KG/4W-I	JOPDAB 104,311,1984
ORL-RAT LD50:75 MG/KG	PCOC** -,1130,1966
SCU-RAT LD50:98 MG/KG	CTOXAO 4,185,1971
UNR-RAT LD50:40 MG/KG	3OZDA9 -,290,1971
ORL-MUS LD50:91 MG/KG	NYKZAU 58,235,1962
IPR-MUS LD50:54 MG/KG	NYKZAU 58,235,1962
SCU-MUS LD50:66 MG/KG	QJPPAL 12,212,1939
IVN-MUS LD50:45 MG/KG	QJPPAL 12,212,1939

TARGET ORGAN DATA
 BRAIN AND COVERINGS (OTHER DEGENERATIVE CHANGES)
 BEHAVIORAL (ANOREXIA, HUMAN)
 BEHAVIORAL (CHANGE IN MOTOR ACTIVITY)
 BEHAVIORAL (ATAXIA)
 BEHAVIORAL (COMA)
 LUNGS, THORAX OR RESPIRATION (OTHER CHANGES)
 GASTROINTESTINAL (NAUSEA OR VOMITING)
 KIDNEY, URETER, BLADDER (CHANGES IN TUBULES)
 EFFECTS ON FERTILITY (POST-IMPLANTATION MORTALITY)
 EFFECTS ON FERTILITY (ABORTION)
 EFFECTS ON EMBRYO OR FETUS (FETAL DEATH)
 TUMORIGENIC EFFECTS (UTERINE TUMORS)
 NUTRITIONAL AND GROSS METABOLIC (CHANGES IN: METABOLIC ACIDOSIS)
 TUMORIGENIC (NEOPLASTIC BY RTECS CRITERIA)
 TUMORIGENIC (TUMORS AT SITE OF APPLICATION)
 ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES
 (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR
 COMPLETE INFORMATION.

SECTION 12. - - - - - ECOLOGICAL INFORMATION - - - - -
 DATA NOT YET AVAILABLE.

SECTION 13. - - - - - DISPOSAL CONSIDERATIONS - - - - -
 CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF
 THIS MATERIAL.
 DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A
 CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER.
 OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. - - - - - TRANSPORT INFORMATION - - - - -
 CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. - - - - - REGULATORY INFORMATION - - - - -
 EUROPEAN INFORMATION
 EC INDEX NO: 080-004-00-7
 VERY TOXIC
 R 26/27/28
 VERY TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
 R 33
 DANGER OF CUMULATIVE EFFECTS.
 R 50/53
 VERY TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE
 EFFECTS IN THE AQUATIC ENVIRONMENT.
 S 13

Appendix 'C' – MSDS Documents

KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDINGSTUFFS.
S 28
AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF SOAP SUDS.
S 36
WEAR SUITABLE PROTECTIVE CLOTHING.
S 45
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).
S 60
THIS MATERIAL AND ITS CONTAINER MUST BE DISPOSED OF AS HAZARDOUS WASTE.
S 61
AVOID RELEASE TO THE ENVIRONMENT. REFER TO SPECIAL INSTRUCTIONS/SAFETY DATA SHEETS.

REVIEWS, STANDARDS, AND REGULATIONS

OEL=MAK
ACGIH TLV-TWA 0.1 MG(HG)/M3 (SKIN) DTLVS* TLV/BEI,1999
MSHA STANDARD-AIR:TWA 0.05 MG(HG)/M3
DTLWS* 3,22,1973
OSHA PEL (GEN INDU):8H TWA 0.01 MG(HG)/M3
CFRGBR 29,1910.1000,1994
OSHA PEL (CONSTRUC):8H TWA 0.01 MG(HG)/M3 (SKIN)
CFRGBR 29,1926.55,1994
OSHA PEL (SHIPYARD):8H TWA 0.01 MG(HG)/M3 (SKIN)
CFRGBR 29,1915.1000,1993
OSHA PEL (FED CONT):8H TWA 0.01 MG(HG)/M3 (SKIN)
CFRGBR 41,50-204.50,1994
OEL-AUSTRALIA: TWA 0.05 MG(HG)/M3, SKIN, JAN1993
OEL-BELGIUM: TWA 0.05 MG(HG)/M3, SKIN, JAN1993
OEL-DENMARK: TWA 0.05 MG(HG)/M3, SKIN, JAN1999
OEL-FINLAND: TWA 1 MG(HG)/M3, JAN1999
OEL-FRANCE: VME 0.1 MG(HG)/M3, JAN1999
OEL-GERMANY: MAK 0.01 PPM (0.1 MG(HG)/M3), JAN1999
OEL-HUNGARY: TWA 0.02 MG(HG)/M3, STEL 0.04 MG(HG)/M3, JAN1993
OEL-JAPAN: OEL 0.05 MG(HG)/M3, JAN1999
OEL-THE NETHERLANDS: MAC-TGG 0.05 MG(HG)/M3, MAC-K 0.15 MG(HG)/M3, SKIN, JAN1999
OEL-NORWAY: TWA 0.05 MG(HG)/M3, JAN1999
OEL-THE PHILIPPINES: TWA 0.05 MG(HG)/M3, JAN1993
OEL-POLAND: MAC(TWA) 0.05 MG(HG)/M3, MAC(STEL) 0.15 MG(HG)/M3, JAN1999
OEL-RUSSIA: TWA 0.05 MG(HG)/M3, STEL 0.01 MG(HG)/M3, JAN1993
OEL-SWEDEN: NGV 0.05 MG(HG)/M3, SKIN, JAN1999
OEL-THAILAND: STEL 0.05 MG(HG)/M3, JAN1993
OEL-UNITED KINGDOM: LTEL 0.05 MG(HG)/M3, STEL 0.15 MG(HG)/M3, JAN1993
OEL IN ARGENTINA, BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV;
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGIH TLV
NIOSH REL TO MERCURY, ARYL AND INORGANIC-AIR:CL 0.1 MG/M3 (SK)
NIOSH* DHHS #92-100,1992
NOHS 1974: HZD 84569; NIS 83; TNF 5617; NOS 30; TNE 242717
NOES 1983: HZD 84569; NIS 32; TNF 3695; NOS 41; TNE 152997; TFE 114190
EPA GENETOX PROGRAM 1988, POSITIVE: S CEREVISIAE GENE CONVERSION
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JANUARY 2001

U.S. INFORMATION

THIS PRODUCT IS SUBJECT TO SARA SECTION 313 REPORTING REQUIREMENTS - MERCURY COMPOUNDS.
THIS PRODUCT IS OR CONTAINS CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE DEVELOPMENTAL TOXICITY.